INSECTARY
NS Dept. of Natural Resources

Insectary Notes

March/April 2009

From the Editor

With spring finally upon us and summer just around the corner, this issue focuses on what to look out for in the coming days. Chrissy has written part 2 of the "What to Watch For" article. Jeff has provided some gardening tips as he heads back to his garden for another season.

Hope you're taking time to enjoy the beautiful days . . . don't let the black flies have all the fun.

'Til next time,

Jacqui

Editing . . . a Rewording Activity

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Say What and Quotes . . .

The following were among winners in a New York Magazine contest in which contestants were to take a well-known expression in a foreign language, change a single letter, and provide a definition for the new expression.

HARLEZ-VOUS FRANCAIS? - Can you drive a French Motorcycle?

VENI, VIPI, VICI - I came, I'm a very important person, I conquered.

COGITO EGGO SUM - I think; therefore, I am a waffle.

RIGOR MORRIS - The cat is dead.

RESPONDEZ S'IL VOUS PLAID - Honk if you're Scottish.

POSH MORTEM - Death styles of the rich and famous.

HASTE CUISINE - Fast French food.

VENI, VIDI, VICE - I came, I saw, I partied.

QUIP PRO QUO - A fast retort.

VISA LA FRANCE - Don't leave your chateau without it.

COGITO ERGO SAM - Sam I am (I think)

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Insect Focus

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What to Watch For - Part 2

Chrissy Campbell, Science Officer, Pest Management

With the warmer season rapidly approaching, forest pests should once again be brought to the forefront. A common question arises: "what would one look for?" In the final part of this two-part series, I will focus on the seedling debarking weevil, white pine weevil, brown spruce longhorn beetle, spruce beetle, jack pine budworm, pale winged grey, and needle casts and rusts in firs.

Seedling Debarking Weevil (SDW) = Hylobius Weevil

Figure 1. Adult seedling debarking weevil. [1]

The native seedling debarking weevil targets conifer seedlings causing reduced establishment and growth. In planted stock, seedling mortality can be high where natural regeneration is low. The life cycle takes two years. Adults emerge from the duff-litter zone in the spring and are present until the end of July. Adults feed on the bark and are attracted to exposed resins. Mated females lay approximately 100 eggs. Several weeks later the eggs hatch and larvae feed on the inner bark. Overwintering occurs in the pre-pupal stage. Pupation occurs the following summer. Adults emerge from July to October and overwinter thereafter in the duff-litter zone.

So what can you do for detection and management? Look for irregular shaped scars on the bark of seedlings caused by adult feeding. If more than 50% of the bark has been removed then the tree will likely die. It is recommended that one wait two years after harvest before planting the seedling stock. However, if planting must occur, scrape back the duff-litter zone to expose the mineral soil. For more information please visit:

Http://www.gov.ns.ca/natr/forestprotection/foresthealth/sheets/sdw.asp

White Pine Weevil (WPW)

The white pine weevil is a native borer that attacks pines and spruces. While mortality is rare, attacked trees exhibit growth and volume loss. This weevil is especially problematic for ornamental growths since the aesthetic value is reduced. Plantations on unproductive sites tend to be more susceptible to attack. There is one generation per year. Adults emerge from the litter layer when temperatures reach approximately 2 - 4 C° where they crawl to the terminal shoot and commence feeding. Eggs are laid within feeding cavities in the bark. Upon egg hatch, larvae burrow into the tree and feed on the inner bark. Pupation occurs within pupal cells located in the pith. Adults emerge from the trees, feed until temperatures decline and then drop down to the litter layer to overwinter.

Figure 2. Leader with shepherd's crook.

Figure 3. WPW adult on eastern white pine. [3]

So what can you do for detection and management? Early detection is essential. Examine young plantations when the trees reach one meter in height. Look for drooping and wilted leaders of the current year growth (looks like a shepherd's crook) which is usually visible by late June. Prune the infected leaders back to the topmost whorl of uninfected branches. This should be done when the larvae are active under the bark from May to the end of July. If the trees are ornamental, prune the them the following year to restore the shape. For more information, please visit

http://imfc.cfl.scf.rncan.gc.ca/insecte-insect-eng.asp?geID=1847

Brown Spruce Longhorned Beetle (BSLB)

The brown spruce longhorned beetle is an invasive woodborer whose presence was confirmed in Point Pleasant Park, Nova Scotia in 1999. In addition to attacking stressed spruces, it is attacking healthy spruces indicating that this invasive is acting differently here relative to its native land. Infested trees start to yellow then brown and lose needles from a portion of the crown. Heavily infested trees can be killed over a period of years.

Figure 4: resinosis on bark caused by BSLB. [4]

Figure 5: Adult BSLB. [4]

Currently, BSLB is under the Canadian Food Inspection Agency's (CFIA) mandate. There is a slow-the-spread program in place. The Department of Natural Resources assists with the trapping survey. There is a containment area (CA) in place where movement of spruce firewood from inside to outside the CA is prohibited. The movement of regulated materials (spruce round logs, unprocessed bark and chips) is prohibited during the high risk flight period from 30 April to 15 September. Within Nova Scotia, regulated articles can move from the CA to non-infested areas in NS under CFIA Movement Certificates when the conditions of movement, to mitigate the spread of BSLB, are met. Additionally, a one kilometer movement restriction is put in place around all positive locations outside the CA. To find out if you are in a restricted area, call the CFIA at 1-877-868-0622.

BSLB has one generation per year. Small larvae overwinter in tunnels 4cm within the wood. In the spring, the larvae pupate. Approximately two weeks later, adult beetles begin to emerge and do so for the remainder of the summer. Peak emergence is generally in June. Adult females lay eggs under the bark scales or in bark crevices rendering them highly concealed. On average, females lay 80 eggs. Egg hatch occurs approximately 10-14 days later. Larvae initially feed on the inner living bark then feed on the sapwood. Once again, the larvae overwinter.

What are the signs of attack? Exit holes measuring approximately 4mm are visible in the bark, however, coarse sawdust may be plugging these holes. Excessive resin that is unexplainable is present and the resin runs down the length of trunk. Just under the bark, networks of feeding tunnels that measure approximately 6mm across will be present and these tunnels may be filled with a sawdust-like material. Approximately 4cm deep, L - shaped tunnels will be visible and these run parallel to the grain. For more information, please visit:

http://www.gov.ns.ca/natr/forestprotection/foresthealth/sheets/bslbeetle.pdf

If you think you have the beetle or infested trees, call, toll free, the Canadian Food Inspection Agency at: 1-877-868-0622

Figure 6: Exit hole created by BSLB. [4]

Spruce Beetle (SB)

Figure 7: Adult spruce beetle. [5]

The native spruce beetle is a bark beetle that is province-wide in distribution. It attacks mature and overmature spruce and prefers white spruce. Tree mortality results when population levels are high. It has a two-year life cycle. First year: Adults emerge in late spring/early summer. Eggs are laid in July and August. Larvae hatch from mid July to mid August followed larval feeding within the sapwood. They over winter in the larval stage. Second year, larvae resume feeding in late spring/early summer. Larvae pupate in October followed by adult eclosion (emergence). They overwinter as adults and emerge in late spring/early summer thus completing the cycle.

So what can you do for detection and management? Carry out regular inspections. Look for holes in the bark on the main stem that are approximately 1mm in diameter. Generally these will have sap dripping from them. Look for dried blobs of sap/pitch over the holes. If the attack is severe then the sap/pitch most likely won't be present and the holes will be easily seen. Look for reddish/brown boring dust (resembles sawdust) on the bark and at the base of the trees. The foliage will yellow then turn a red/brown colour. The outer bark may start to flake off due to wood pecker attack. Harvest your trees before they become overmature. Remove blowdowns from the area as soon as possible. Minimize high stumps, cull logs and large slash during harvest. Infected trees should be removed and processed immediately. Additionally, destroy the bark and slabs. For more information, please visit:

http://www.gov.ns.ca/natr/forestprotection/foresthealth/sheets/spruceb1.pdf

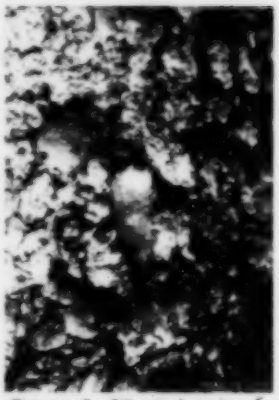

Figure 8: SB pitch tube. [6]

Jack Pine Budworm (JPBW)

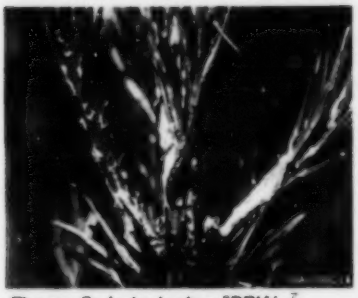

Figure 9: Late instar JPBW. [7]

The jack pine budworm is a native defoliator attacking white pine in Nova Scotia rather than its usual host, jack pine. It feeds wastefully resulting in growth loss, top kill and widespread tree mortality. The jack pine budworm has one generation per year. Larvae emerge from the overwintering site in late spring and feed on pollen cones and needles. Needles webbed together to create feeding shelters is common. Pupation follows and eggs are laid in July. Following hatch, larvae seek out an overwintering site.

Figure 10: JPBW adult. [8]

So what can you do for detection and management? Look for red foliage and defoliation in the upper crown. Additionally, look for cut needles and larval frass tangled in stands of silk located on the annual shoots. Foremost, maintain healthy and vigorous pine trees. It is recommended to avoid overmature trees, overstocking, and excessively sandy and dry sites. Secondly, minimize male flower production by increasing stand density, avoid uneven age stands and reduce edges. For more information, please visit:

http://imfc.cfl.scf.rncan.gc.ca/insecte-insect-eng.asp?geID=12024

Pale Winged Grey (PWG)

The native pale wing grey is a defoliator causing extensive damage to hemlock in Nova Scotia. When populations are high, a tree can be killed in as little as two years. It has one generation per year. Eggs overwinter on the bark. Egg hatch occurs in July and larvae feed on both new (early instars) and old (later instars) foliage. In July, larvae pupate and drop to the ground followed by adult emergence. These nocturnal moths are active from July to mid August. Egg lay is on the bark.

Figure 11: Adult PWG. [9]

Figure 12: Damage caused by PWG

So what can you do for detection and management? Look for missing or red foliage especially on understory trees and lower branches of larger trees. Remove your dead and dying trees. For more information, please visit:

http://www.gov.ns.ca/natr/forestprotection/foresthealth/sheets/pwg.pdf

Needle Rusts and Casts

Needle casts and rusts are caused by various fungi. Typically, these fungi will cause needle loss, however, in young trees and nursery stock, these fungi can cause significant damage resulting in growth loss and even mortality. Various life cycles are known and specific to the fungus in question.

Figure 13: Needle cast on fir. [10]

So what can you do for detection and management? Examine your trees for brown to straw-like colored needles. Generally, these will be concentrated on the lower crown. Also look for fruiting bodies on the needles which range from white to black in colour depending on the fungus. A word of caution since other damaging factors can produce similar signs such as insect damage (look for chewed areas) or the cold.

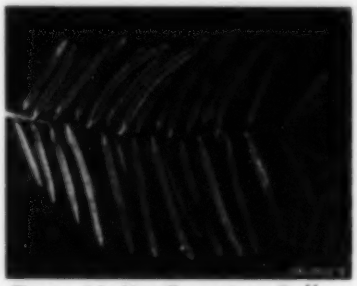

Figure 14: Needle cast on fir [11].

For management, generally one should manage for a suite of fungi rather than a specific fungus. Avoid planting in low lying, wet and shady areas and where natural infestations occur. Avoid crowding your trees and control the weed population to promote good air flow. Check the surrounding areas for and remove alternate hosts (such as fireweed). Shear off infected branches and make sure you sanitize your shears between branches by immersing them in a bleach or alcohol solution for approximately 3-5 minutes. Wait for a dry day to shear and always shear your healthy trees prior to diseased ones. Avoid wounding your trees and make clean cuts. Registered fungicides are available. If the tree is heavily diseased, cut it down. For more information, please visit:

Figure 15: Spruce needle rust [12].

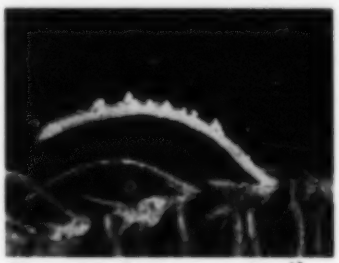

Figure 16: Rust on needles [13].

http://imfc.cfl.scf.rncan.gc.ca/maladie-disease-eng.asp?geID=11&ind=N
http://imfc.cfl.scf.rncan.gc.ca/maladie-disease-eng.asp?geID=28

Image credits

[1] Dr. John A. Haarstad, The Insects of Cedar Creek, Minnesota, http://cedarcreek.umn.edu/insects/

[2] Minnesota Department of Natural Resources Archive, US, http://Bugwood.org

[3] A. Steven Munson, USDA Forest Service, US, http://Bugwood.org

[4] Jon Sweeney, Natural Resources Canada, Canada, http://Bugwood.org

[5] Edward Holsten, USDA Forest Service, US, http://Bugwood.org

[6] Darren Blackford, USDA Forest Service, US, http://Bugwood.org

[7] Steven Katovich, USDA Forest Service, US, http://Bugwood.org

[8] USDA Forest Service - Northeastern Area Archive, US, http://Bugwood.org

[9] Wildflowers of the Escambia, http://wildflowers.jdcc.edu/Pale-winged%20Gray.JPG

[10] André Carpentier, Natural Resources Canada, Canadian Forest Service

[11] Susan K Hagle, USDA Forest Service, US, http://Bugwood.org

[12] Paul E Hennon,USDA Forest Service, US, http://Bugwood.org

[13] Natural Resources Canada, Canadian Forest Service

Provincial Entomologist's Overview . . What's the Buzz?

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Our Forest Health staff continue to be a proactive unit when it comes to invasive forest pests. The staff continues to contribute resources, manpower and knowledge to the slow the spread campaign for the brown spruce longhorned beetle under the lead agency, the Canadian Food Inspection Agency. The gypsy moth monitoring program continues with only low moth catches observed. The whitemarked tussock moth population remains low. Additionally, the staff continues to monitor for the presence of the pine shoot beetle. This devastating invasive has not been detected in our province yet!

Our commitment to a proactive approach continues! A new detection survey for the invasive hemlock woolly adelgid will commence this fall. Morevoer, Forest Health staff are designing and implementing permanent sample plots for the balsam woolly adelgid.

Remember, firewood may be housing these devastating invasives. Movement of firewood is a common way to spread these invasives. To highlight the importance, the Canadian Food Inspection Agency has a proactive "Don't move firewood" campaign:

★ Don't Move Firewood
★ Buy and Burn Local Firewood Only
★ Learn Where Your Firewood Comes From
★ Learn if You Are Living in or Traveling to an Area with Regulated Invasives
★ Leave Natural Items in Their Natural Habitats

Until Next Time,

Chrissy

Chrissy Campbell, Science Officer, Pest Management

Bits and Pieces

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As far as I am concerned "It's the most wonderful time of the year"

Jeff Ogden

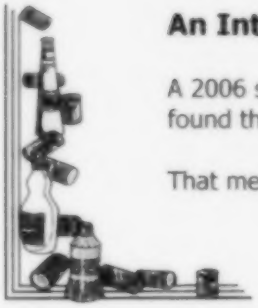
No, it's not Christmas or back-to-school- time . . . it's gardening time. The warm weather and cool rains bring out the spring flowering bulbs and my early blooming perennials. My shovel, wheelbarrow, and muscle relaxing pills have been waiting for this season all winter. For those others inclined to dig in the dirt, you should be on the look out for few critters that are not your friends.

Cutworm and June beetle larvae are chewing on your roots. Pinching them between your fingers is very rewarding but some kind of systemic grub killer works better if numbers are high.

Lily Beetle, though a beautiful color of red, can destroy your oriental and Asiatic lilies. I recommend digging affected lilies up and destroying them to risk the spread of this pest or a systemic pesticide sprayed on foliage and ground may work.

On your roses, look out for Japanese beetles or the slug-like larvae of a sawfly. An insecticidal soap is recommended for the latter and an systemic grub killer for the former.

the last laugh ...



An Interesting Study?

A 2006 study found that the average Canadian walks about 900 miles a year. The study also found that Canadians drink on average 22 gallons of beer a year.

That means, on average, Canadians get about 41 miles per gallon. That's not bad mileage.

The 10 Laws of Gardening!

1. Nothing ever looks like it does on the seed packet.
2. Your lawn is always slightly bigger than your desire to mow it.
3. Whichever garden tool you want is always at the back of the shed.
4. The only way to ensure rain, is to give the garden a good soaking.
5. Weeds grow at precisely the rate you pull them out.
6. Autumn follows summer, winter follows autumn, drought follows planting.
7. Evergreens go a funny shade of brown in the winter.
8. The only way to guarantee some colour all year round is to buy a garden gnome.
9. However bare the lawn, grass will appear in the cracks between the patio paving stones.
10. "Annuals" mean disappointment once a year.

The English Language:

If GH can stand for P as in Hiccough

If OUGH can stand for O as in Dough

If PHTH can stand for T as in Phthisis

If EIGH can stand for A as in Neighbor

If TTE can stand for T as in Gazette

If EAU can stand for O as in Plateau

Then the right way to spell POTATO should be:

"GHOUGHPHTHEIGHTTEEAU"

(HINT: **GH - OUGH - PHTH - EIGH - TTE - EAU**)